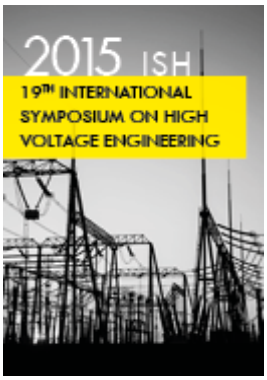
Reference: **ISH2015_508**



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Title:
Diagnostic Interpretation of Mechanic Oscillations of Power Transformers

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Abstracts

Continuous monitoring of transformers in the electrical grid can supplement asset management. Thus monitoring, especially of power transformers, is slowly entering common practice if both, benefit gained by monitoring and additional costs meet reasonably. Most continuous measurements concentrate on oil temperature, fault gases and electric issues, naming partial discharges as the most prominent representative. In contrast to the aforementioned, this contribution discusses the mechanical status of transformers' active parts and methods given to measure its status, namely vibration measurements. At first, vibrations are evaluated using a laboratory setup. It consists of a distribution transformer with variable core clamping forces and vibration sensors which measure directly on different positions on yokes and on the tank wall. Differences of core positions as well as the coupling between core and tank wall are evaluated. Secondly, vibration measurement systems are used onsite, online on different power transformers in service for a practical evaluation. The influence of the sensor positions at the tank wall is determined considering both, the signal strength and frequency spectrum. Long-term measurements are correlated with load behaviour, oil temperature, different cooling systems and the on-load tap changer position providing the interaction between the transformer's operational state and its mechanical oscillations. In conclusion an overview of influencing factors is provided.